

Update on the use of near real time and other data sets in partnership with the State of California: Cascadia Rising 2016 and Vigilant Guard 17

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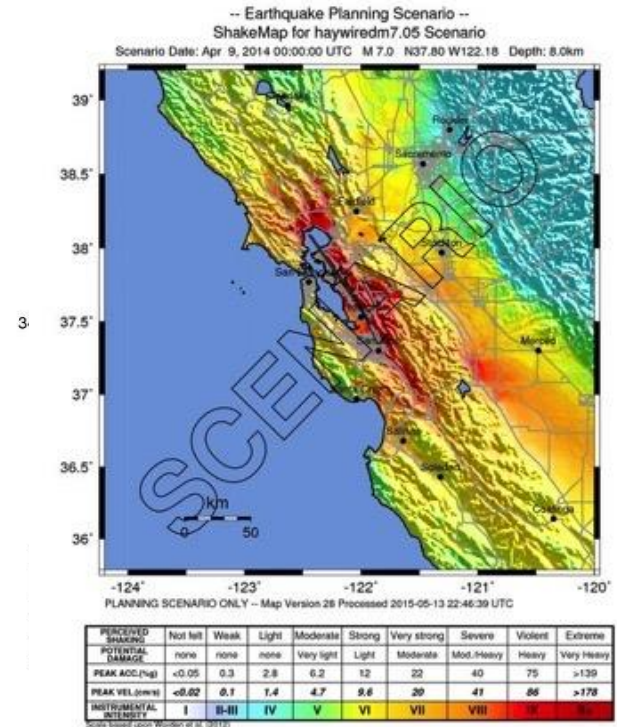
The Problem

- Providing actionable data for situational awareness following a disaster is critical to decision makers
 - Improves their ability to anticipate requirements and provide appropriate resources for response.
 - Essential Elements of Information (EEI) necessary to achieve situational awareness are often generated from a wide array of organizations and disciplines, using any number of geospatial and non-geospatial technologies.

We must work to **enable coordination** between research scientists, applied scientists and decision makers in order to **reduce duplication of effort, maximize information sharing, translate scientific results** into actionable information for decision-makers, and **increase situational awareness**.

The Exercises

- Cascadia Rising was a FEMA National Level Exercise held 7-10 June 2016
 - The scenario included a M 9.0 earthquake resulting in the complete rupture of 700-mile Cascadia Subduction Zone that triggered a tsunami and multiple aftershocks
- Vigilant Guard 17 was a Full Scale National Guard Exercise hosted by California and Nevada held 10-14 November 2016
 - The scenario included a M 6.0 earthquake east of Las Vegas and a M 7.8 earthquake in southern California with multiple aftershocks
- Haywired 2017 California Exercise is an earthquake scenario to model and study impacts on the San Francisco Bay area from a Mw 7.05 earthquake on the Hayward fault (planned early 2017)
 - Builds upon understanding of the last large earthquake to occur on the Hayward fault in 1868
 - Considers that modern urban infrastructures are made vulnerable by multiple layers of interdependencies between lifelines
 - Also considers impacts from a sequence of aftershocks following the main earthquake



Cascadia Rising Goals and Objectives

- **Enhance Disaster Response Joint-Operations** – Test the local, state, tribal, and federal government as well as select private sector and non-government organizations' ability to jointly respond to a Cascadia Subduction Zone M9.0 earthquake and tsunami with associated aftershocks along the West Coast of the U.S.
- **Prepare for a Level-1 Catastrophic Earthquake Disaster** – Link together Emergency Operations Centers (EOCs) throughout the Pacific Northwest to coordinate and mimic all facets of a complex, wide-area, response to a catastrophic disaster.
- **Exercise the California Earthquake Clearinghouse** – focus on interdependencies of critical infrastructure, information sharing, and coordination for response, recovery, and regional resiliency.

Vigilant Guard Goals and Objectives

Mission Statement

- California and Nevada will host a Full Scale Exercise (Vigilant Guard 17-1) in the vicinity of Southern California and Nevada that stresses the region's response capabilities from **14 - 20 November 2016** in order to train, develop, and refine joint functions by executing the Regional Response Plan, the Dual Status Commander process, and collaborating and integrating with state and federal partners.

Program Description

- Vigilant Guard exercises support Interagency play and National Guard civil support/DSCA missions, by:
 - Employing scenarios and events where National Guard forces can interact with Local, State, and Federal agencies
 - Enabling planning efforts of civil agencies by incorporating their objectives and activities into the overall exercise
 - Providing an exercise “jumping off” point for civilian partners internal exercise events, let them leverage this as much as possible

Participating Agencies: Cascadia Rising

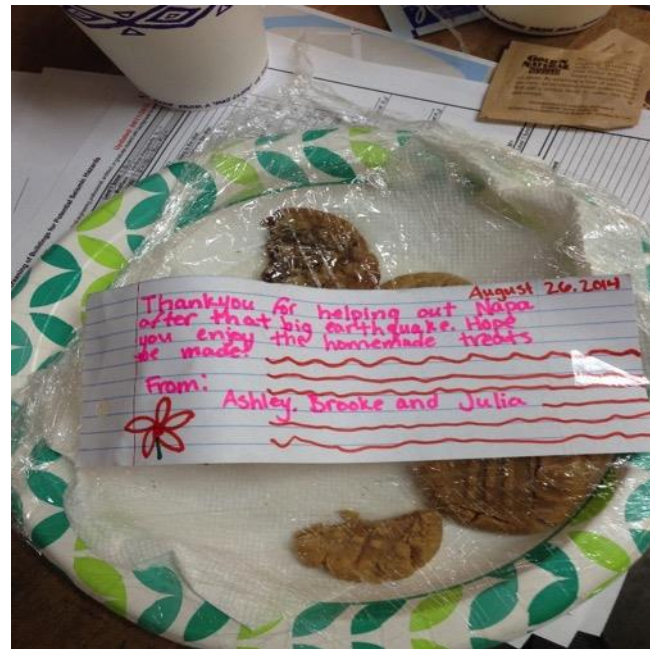
- Over 50 counties and numerous cities across three states
- 19 tribes in OR and WA
- Three state EOCs with all state ESF agencies represented
- FEMA Region 10 RRCC with all Federal ESF and Interagency partners represented
- FEMA NRCC with all Federal ESF and Interagency partners represented
- U.S. TRANSCOM and U.S. NORTHCOM linked exercises and other military and USCG commands
- British Columbia and Public Safety Canada
- Private sector, hospitals, utilities, Non-governmental Organizations etc.
- California Earthquake Clearinghouse and partner organizations (EERI, USGS, NASA, San Jose Water Company, Humboldt County OES, San Diego Law Enforcement Coordination Center, California Department of Fish and Wildlife, Office of Spill Prevention and Response, California Department of Public Health, EF-8, California Environmental Protection Agency, EF-10, Bay Area Center for Regional Disaster Resilience, California Independent System Operator (Cal ISO), Single Automated Business Exchange for Reporting (SABER), California Office of Emergency Services, FEMA Region 9, FEMA Region 10, Cascadia Region Earthquake Working Group, City of Walnut Creek, California National Guard, State of Washington, Central U. S. Earthquake Consortium, Association of Engineering Geologists - Inland Empire, Inland Geological Society, Caltrans

Participating Agencies: Vigilant Guard

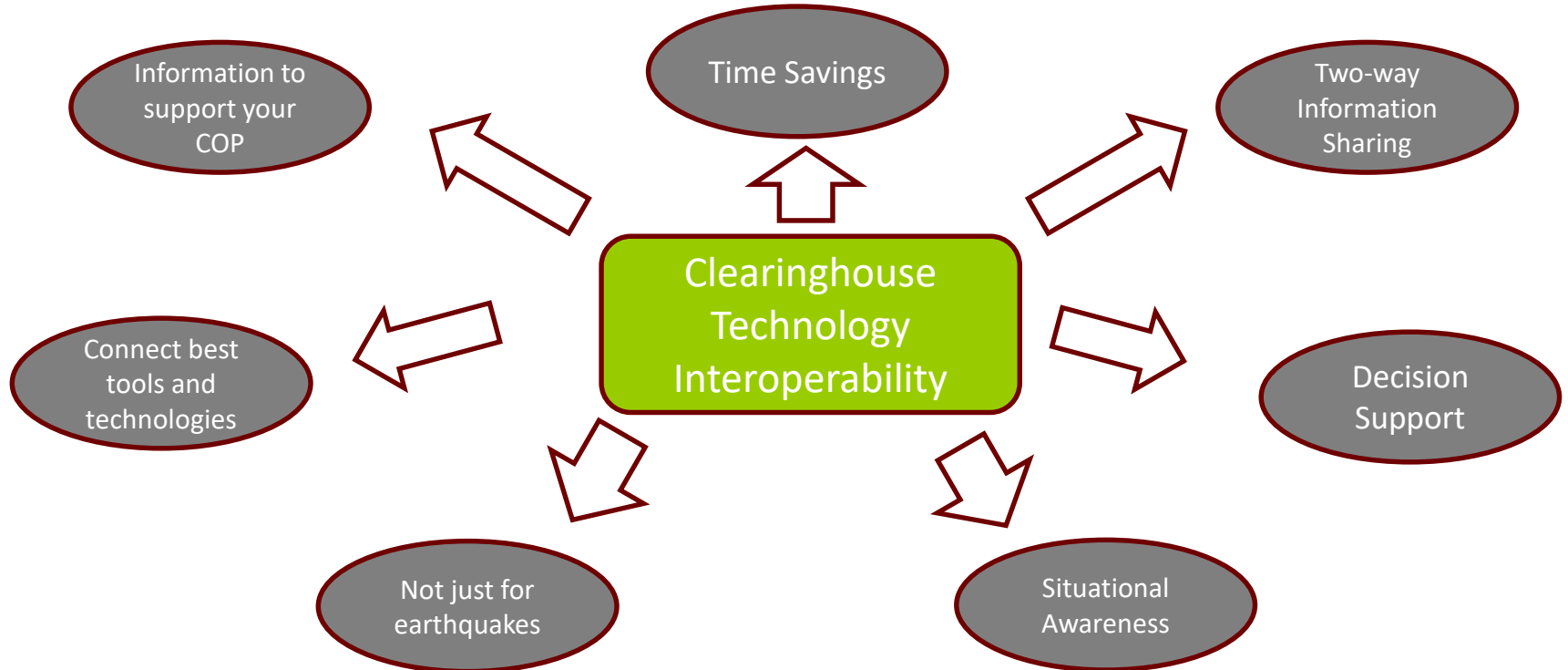
- **Federal**
 - Federal Emergency Management Agency, Region 9
 - Federal Emergency Management Agency, Region 10
 - United States Geological Survey
 - Federal Bureau of Investigation
 - National Aeronautics and Space Administration Jet Propulsion Laboratory
- **State**
 - California Geological Survey
 - California Environmental Protection Agency, EF/ESF 10
 - California Department of Public Health, EF/ESF 8
 - San Diego Law Enforcement Coordination Center
 - California Air National Guard
 - San Jose Water Company
 - California Public Utilities Commission
 - California Water/Wastewater Agency Response
- **Network**
 - California Office of Emergency Services
 - City of Walnut Creek
 - City of Las Vegas
 - Washington State Office of Emergency Services
 - Oregon Dept. of Geology and Mineral Industries
 - Arizona State University
 - Arkansas Geological Survey
 - Structural Engineers Association of Southern California
 - Earthquake Engineering Research Institute
 - National Association of Public Safety GIS Professionals – N. CA Chapter
 - California Independent System Operators
 - Geotechnical Extreme Events Response
- **Private Sector**
 - SpotOnResponse
 - SABER, Single Automated Business Exchange for Reporting
 - Sears Holdings (SABER member providing business status)
 - Walmart (SABER member providing business status)
 - Target (SABER member providing business status)
 - Costco (SABER member providing business status)
 - Macy's (SABER member providing business status)
 - Walgreens (SABER member providing business status)
 - Southwest Gas
 - Kern River Gas
 - Southern California Edison
 - BNSF Railway

Clearinghouse Objectives

- Facilitate field investigations by earth scientists, engineers and social scientists, who converge on the disaster site
- Assist researchers in accessing perishable data through coordination with emergency management organizations and law enforcement
- Provide a forum for sharing information via meetings at a physical location (field office) and through our new virtual Clearinghouse
- Track fieldwork progress and minimize duplication of effort; organize data and imagery collected via various technologies and applications and synthesize information for response agencies
- ***Clearinghouse does not direct or control activities of participants***



Value of Clearinghouse Data Sharing Efforts



Information Sharing Between Multiple State, Federal, Local Organizations through XchangeCore connected applications



FEMA

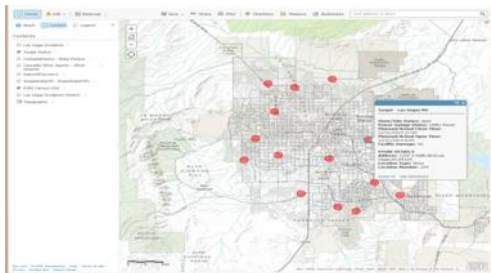


N. CA
Chapter

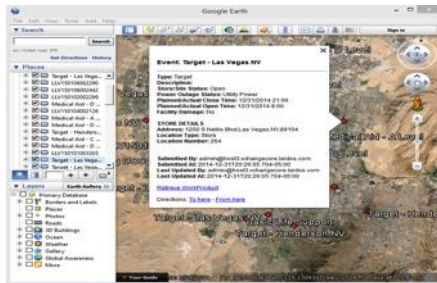


Incident Situational Awareness Exchanged

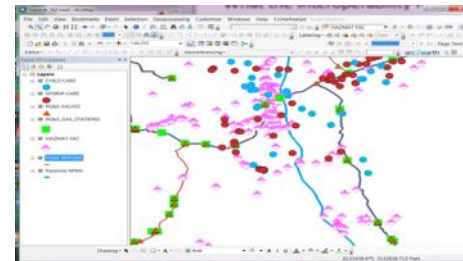
AGOL



Google Earth



ArcGIS



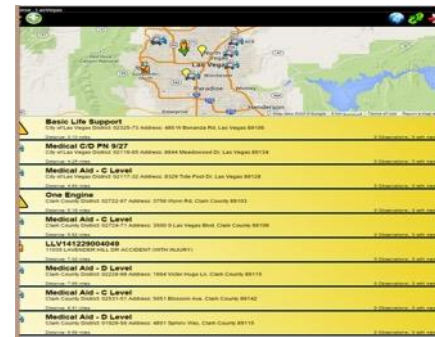
Web EOC

NYE 2014 XchangeCore Incidents

Incident ID	Title	Event Type	Location	Status	Details	Map	Update
2502	LLV141221002704	05/01/2015 01:44:41	Incident	Las Vegas	Completed	Details	Update
2482	LLV141221002704	05/01/2015 00:36:32	Incident	Las Vegas	Completed	Details	Update
2481	LLV141221002514	05/01/2015 00:36:31	Incident	Las Vegas	Completed	Details	Update
2506	LLV141221002513	05/01/2015 01:38:46	Incident	Las Vegas	Completed	Details	Update
2503	LLV141221002513	05/01/2015 01:54:02	Incident	Las Vegas	Completed	Details	Update
2508	LLV141221002513	05/01/2015 01:54:02	Incident	Las Vegas	Completed	Details	Update
2507	LLV141221002513	05/01/2015 01:54:02	Incident	Las Vegas	Completed	Details	Update
2509	LLV141221002513	05/01/2015 01:54:02	Incident	Las Vegas	Completed	Details	Update
2504	LLV141221002513	05/01/2015 01:38:46	Incident	Las Vegas	Completed	Details	Update
2505	LLV141221002513	05/01/2015 01:38:46	Incident	Las Vegas	Completed	Details	Update
2501	Target - Las Vegas NV	12/31/2014 20:26:12	Target	Las Vegas	Completed	Details	Update
2502	Target - Las Vegas NV	12/31/2014 20:26:12	Target	Las Vegas	Completed	Details	Update
2503	Target - Las Vegas NV	12/31/2014 20:26:12	Target	Las Vegas	Completed	Details	Update
2504	Target - Las Vegas NV	12/31/2014 20:26:12	Target	Las Vegas	Completed	Details	Update
2505	Target - Las Vegas NV	12/31/2014 20:26:12	Target	Las Vegas	Completed	Details	Update
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2512	Target - Las Vegas NV	12/31/2014 20:26:12	Target	Las Vegas	Completed	Details	Update
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2514	Target - Las Vegas NV	12/31/2014 20:26:12	Target	Las Vegas	Completed	Details	Update
2515	Target - Las Vegas NV	12/31/2014 20:26:12	Target	Las Vegas	Completed	Details	Update
2516	Target - Las Vegas NV	12/31/2014 20:26:12	Target	Las Vegas	Completed	Details	Update
2517	Target - Las Vegas NV	12/31/2014 20:26:12	Target	Las Vegas	Completed	Details	Update
2518	Target - Las Vegas NV	12/31/2014 20:26:12	Target	Las Vegas	Completed	Details	Update

Common Operational **DATA** Shared to different technologies

Mobile Apps

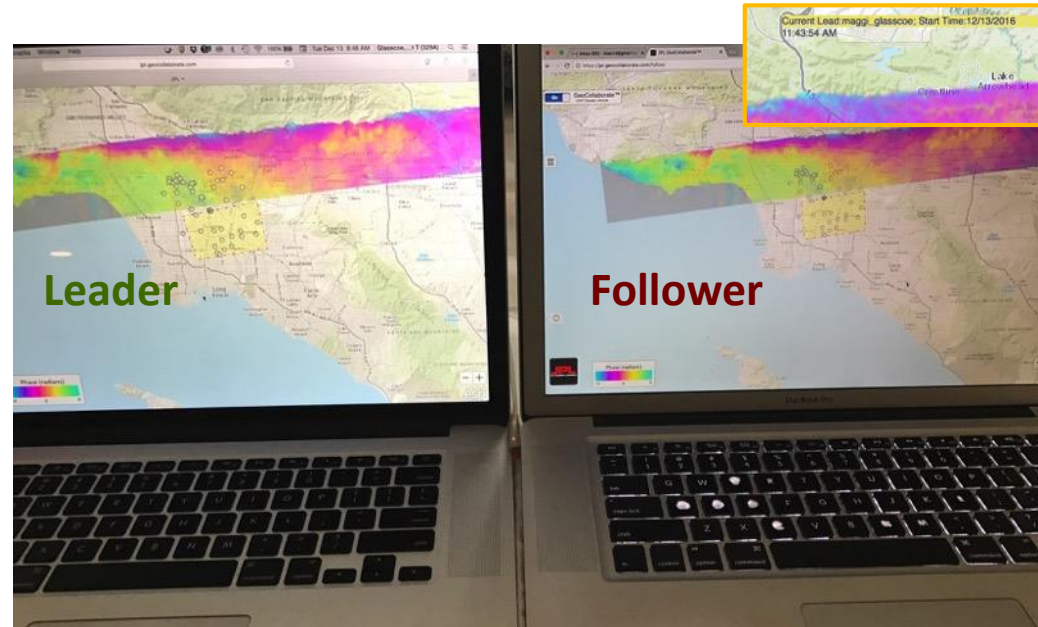


Incidents Exchanged
between WebEOC/CalEOC
and SpotOnResponse

Real-time collaboration: GeoCollaborate®

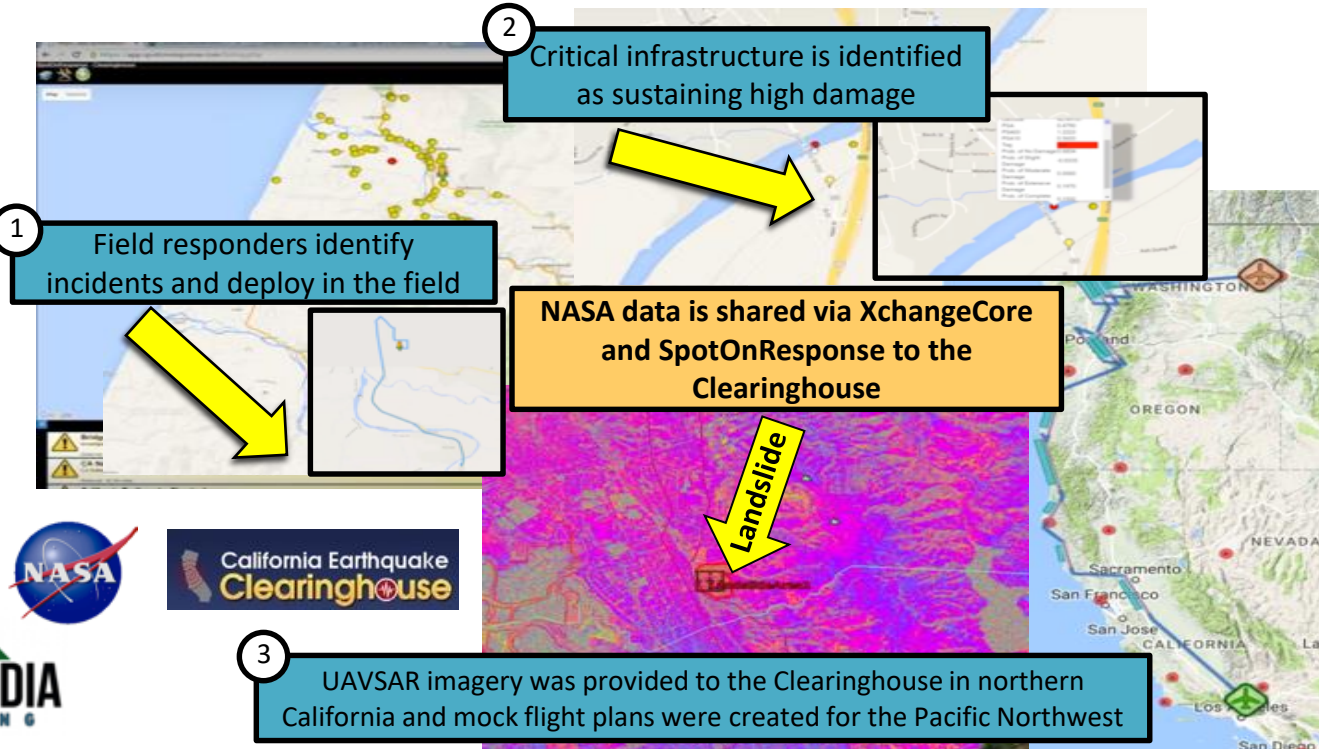
- GeoCollaborate® enables users to access, share, manipulate, and interact across disparate platforms
- Connects public and private sector agencies and organizations rapidly on the same map at the same time
- Allows improved collaborative decision making on the same datasets simultaneously
- StormCenter and JPL, through the ESIP Disasters Cluster have been developing a testbed to demonstrate this capability

JPL Testbed with lead/follow displays



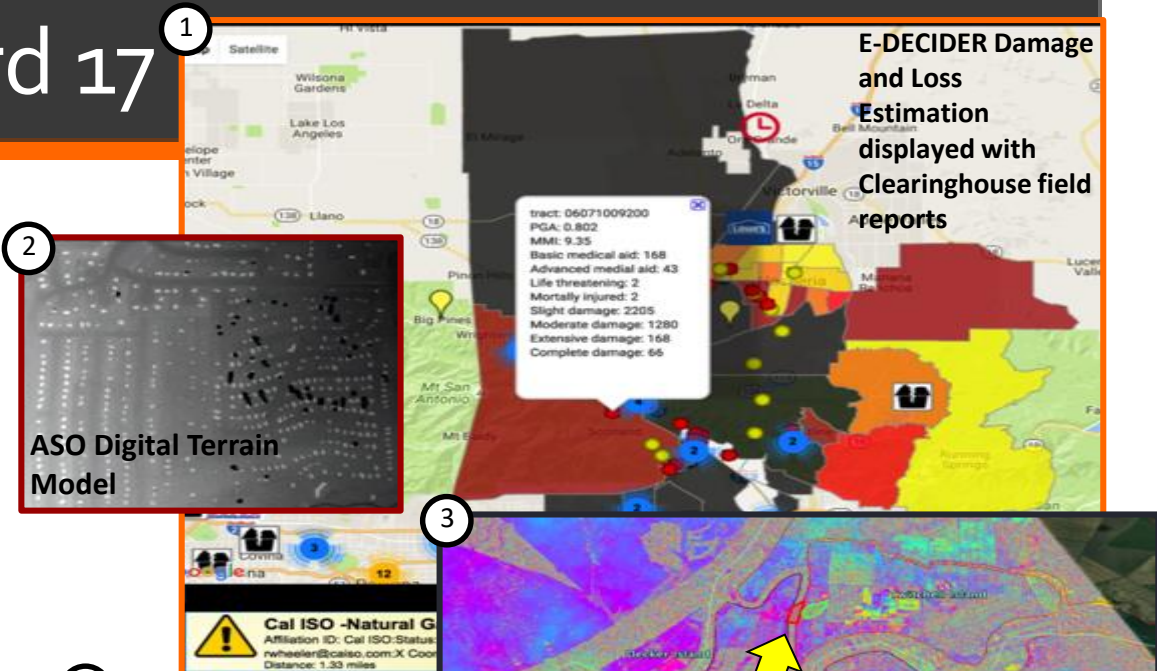
Data Sharing to the Clearinghouse: Cascadia Rising

- The California Earthquake Clearinghouse held a parallel exercise focused on interdependencies of critical infrastructure, information sharing, and coordination for response, recovery, and regional resiliency
- NASA participants supported the Clearinghouse through XchangeCore Web Service Data Orchestration and SpotOnResponse



Vigilant Guard 17

- The California Earthquake Clearinghouse, California National Guard, and partners (including NASA) participated from 14-20 November 2016
- NASA provided response products and remote sensing imagery to the Clearinghouse via XchangeCore Web Service Data Orchestration for integration with field response and decision support
- NASA representatives also participated with National Guard imagery analysts at the Joint Operations Center at Beale AFB to provide product integration and analysis support
- NASA provided (1) rapid response assessment products from E-DECIDER and imagery from (2) Airborne Snow



**Information
Sharing
Workflow**

Products Generated



Authoritative data securely
shared

**Users query
products**

(SpotOnResponse,
NICS, Google Earth,
etc)



**Pass on to Decision Makers
(local, state, federal)**



Some final thoughts...

- Participation in exercises gives us the unique opportunity to both demonstrate capability, evaluate our response process, and improve for future disasters
- Capacity building during and between exercises and leveraging partnerships (particularly such as our long-standing California State partnership) will allow better understanding of stakeholder needs
- Technology interoperability and common operational data allow each organization to use the specialized tools and technologies that best support their roles and responsibilities in responding to a disaster—ANY disaster, not just earthquakes
- Individuals liberated from the routine, mundane, *critical*, but very time consuming, tasks of moving, sharing, organizing and managing data, when you least have the time to do so, i.e. when you're trying to prepare for an Executive Briefing!
- Data experts and analysts have more time to perform the most critical and important tasks they need to complete to support disaster response efforts
- Better coordination among participating organizations
- EOC managers can make informed decisions about logistics and resources when they have real-time information about the disaster impacts



Thank you for your attention!

Questions?

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